

**WE CLAIM:**

1           1.       A method of fabricating a Bragg reflector comprising:  
2           forming at least one structure layer and at least one sacrificial layer in alternating  
3           relation on a substrate;  
4           etching the structure and sacrificial layers into at least one mesa protruding from the  
5           substrate;  
6           forming a support layer on the at least one mesa leaving a portion of the structure and  
7           the sacrificial layers exposed; and  
8           etching at least a portion of at least one of the exposed sacrificial layers to form a gap.

1           2.       The method of claim 1 wherein forming a support layer on the at least one  
2           mesa comprises masking a portion of the mesa to prevent deposition of the support layer on  
3           the portion of the mesa.

1           3.       The method of claim 2 wherein forming a support layer is depositing the  
2           support layer in a chemical vapor deposition process and wherein the mask is a dielectric  
3           mask.

1           4.       The method of claim 1 wherein the material of the structure layer and the  
2           material of the support layer comprise substantially the same material.

1           5.       The method of claim 1 wherein the structure layer material is different than a  
2       sacrificial layer material, and wherein etching at least a portion of at least one of the exposed  
3       sacrificial layers comprises etching the sacrificial layers without substantially etching the  
4       structure layers.

1           6.       The method of claim 5 wherein etching further comprises etching without  
2       substantially etching the support layer.

1           7.       The method of claim 1 wherein the at least one mesa has a sidewall, and  
2       wherein forming a support layer on the at least one mesa comprises forming the support layer  
3       on at least a portion of the sidewall.

1           8.       The method of claim 1 wherein the sacrificial layer comprises a material  
2       selected from the group consisting of InGaAs, AlAs, and SiO<sub>2</sub> and the structure layer  
3       comprises a material selected from the group consisting of InP, GaAs, and Si.

1           9.       The method of claim 8 wherein the support layer comprises a material selected  
2       from the group consisting of InP, GaAs, and Si.

1           10.      The method of claim 1 further comprising doping at least a portion of the  
2       support layer to create an electrically conductive path.

1           11.     The method of claim 1 further comprising doping at least a portion of the  
2     support layer to make at least the portion of the support layer electrically non-conductive.

1           12.     A Bragg reflector comprising:  
2             one or more first layers adjacent one or more second layers, the first and second layers  
3     having at least one sidewall, wherein the first and second layers define one or more gaps; and  
4             a support layer formed over at a least portion of the sidewalls to support the second  
5     layers against intrusion into the one or more gaps.

1           13.     The Bragg reflector of claim 12 wherein the second layers and the support  
2     layer comprise substantially the same material.

1           14.     The Bragg reflector of claim 12 wherein at least a portion of the support layer  
2     is electrically conductive.

1           15.     The Bragg reflector of claim 12 wherein at least a portion of the support layer  
2     is electrically non-conductive.

1           16.     A distributed Bragg reflector comprising:  
2             a substrate;  
3             a plurality structure layers on the substrate each spaced apart by a gap, the  
4     structure layers each having edges; and  
5             a support layer about a portion of the edges for supporting the structure layers.

1           17.     The distributed Bragg reflector of claim 16 further comprising sacrificial  
2     layers between the structure layers, the sacrificial layers undercut to define the gaps.

1           18.     The distributed Bragg reflector of claim 16 wherein the support layer  
2     comprises a material selected from the group consisting of InP, GaAs, and Si.

1           19.     The distributed Bragg reflector of claim 16 wherein the structure layers  
2     comprise a material selected from the group consisting of InP, GaAs, Si.

1           20.     The distributed Bragg reflector of claim 16 wherein the support layer covers at  
2     least a portion of a top of the structure layers.